INDEX

Petroleum Transactions, Volume 201

(Plus References to Articles and Technical Notes Published in JOURNAL OF PETROLEUM TECHNOLOGY *in 1954)*

A

ALLEN, T. O., and ATTERBURY, J. H., JR.: *Effectiveness of Gun Perforating*, 8 (Jan. JPT, 34)

AMMONIA contained in Colorado shale deposits, (Art.) Feb. JPT, 9

AREAL SWEEP PATTERNS: potentiometric model studies of vertically fractured reservoir, 192 (Aug. JPT, 41)

ARONOFSKY, J. S., and JENKINS, R.: *Simplified Analysis of Unsteady Radial Gas Flow*, 149 (July JPT, 23)

ARONOFSKY, J. S., and WALLICK, G. C.: *Effect of Gas Slip on Unsteady Flow of Gas through Porous Media —Experimental Verification* (Tech. Note) Oct. JPT, 27

ARPS, J. J.: *Estimating Oil Reserves*, (Art.) July JPT, 55

ASHBY, W. H., et al.: *Pressure Maintenance by Gas Injection in the Brookhaven Field, Mississippi*, 97 (April JPT, 43)

ATTERBURY, J. H., JR., and ALLEN, T. O.: *Effectiveness of Gun Perforating*, 8 (Jan. JPT, 34)

AUTOMATIC OIL PRODUCTION EQUIPMENT for tank switching and flow control, Gulf Refining Co., Weeks Island, field, Louisiana, (Art.) Jan. JPT, 21

B

BEARDEN, W. G., and WILSEY, L. E.: *Reservoir Fracturing — A Method of Oil Recovery for Extremely Low Permeability Formations*, 169 (Aug. JPT, 21)

BERRY, V. J., JR., et al.: *Role of Bubble Formation in Oil Recovery by Solution Gas Drives in Limestones*, 294 (Dec. JPT, 21)

BERRYMAN, R. J.: *Micro-Hole Drilling*. Report by C. R. McEwen, (Art.) Aug. JPT, 10

BERTUZZI, A. F., et al.: *Phase and Volumetric Behavior of Natural Gases at Low Temperatures and High Pressures*, 245 (Oct. JPT, 37)

BIG MINERAL FIELD, TEXAS: solution of exploitation problems by cooperation of various engineers, (Art.) Dec. JPT, 9

BLOMBERG, C. R., et al.: *Pressure Maintenance by Gas Injection in the Brookhaven Field, Mississippi*, 97 (April JPT, 43)

BOBO, R. A., and HOCH, R. S.: *Mechanical Treatment of Weighted Drilling Muds*, 93 (April JPT, 39)

BRADENHEAD SQUEEZING, 17 (Jan. JPT, 43)

BRANNON, H. R., JR., et al.: *Interrelation of Resistivity and Potential of Shaly Reservoir Rock*, 176 (Aug. JPT, 29)

BRONS, F., et al.: *Method for Determination of Average Pressure in a Bounded Reservoir*, 182 (Aug. JPT, 35)

BROOKHAVEN FIELD, MISSISSIPPI: five years of unitized pressure maintenance basis for optimistic outlook, 97 (April JPT, 43)
Geology, 97 (Apr. JPT, 43)

BROWNE, W. H., et al.: *Optimum Sand Concentrations in Well Treatments*, 273 (Nov. JPT, 35)

BRYANT, C. M.: *Dye-Photo Tool: Its Operation and Applications*, (Art.) Oct. JPT, 13

BUBBLES: gas, in solution gas drive of limestone reservoirs of non-uniform porosity, role in oil recovery, laboratory study and indicated possibilities, 294 (Dec. JPT, 21)

BUNDRANT, C. O., et al.: *Optimum Sand Concentrations in Well Treatments*, 273 (Nov. JPT, 35)

BUREAU OF MINES: water-tracer laboratory studies at Bartlesville, 210 (Sept. JPT, 118)

BURROWS, D. B., et al.: *Viscosity of Hydrocarbon Gases under Pressure*, 264 (Oct. JPT, 47)

C

CALDWELL, B. M., and OWEN, H. D.: *New Tool for Perforating Casing below Tubing*, 302 (Dec. JPT, 29)

CALIFORINIA RESEARCH CORP'S. model oil well, filtration measurements, 29 (Feb. JPT, 30)

CALLAWAY, F. H., et al.: *Comparison of Methods for Analyzing a Water Drive Field, Torchlight Tensleep Reservoir, Wyoming*, 197 (Sept. JPT, 105)

CAPILLARY PRESSURE: measurement in experiments on displacement of oil and water in alundum core, 57 (March JPT, 21)

CARR, N. L., et al.: *Viscosity of Hydrocarbon Gases under Pressure*, 264 (Oct. JPT, 47)

CASING: leak located with Dye-Photo tool, (Art.) Oct. JPT, 14
Perforating below tubing. See Perforator

CASSINGHAM, R. W., et al.: *Pressure Maintenance by Gas Injection in the Brookhaven Field, Mississippi*, 97 (April JPT, 43)

CAUDLE, B. H., et al.: *Oil Production after Breakthrough as Influenced by Mobility Ratio*, 81 (April JPT, 27), correction, June JPT, 38

CEMENTING: simplified technique for recompletion operations: theory, surface experiments, process, field results, 1 (Jan. JPT, 27)

CEMENT SLURRIES: clay bubbles reduce weight safely to 10 pounds, 146 (June JPT, 35)
Kerosene-cement for plugging off water in fractured formations, 132 (June JPT, 21)
CENTRIFUGE, decanting type useful in treatment of weighted drilling muds, 93 (April JPT, 39)
CHALKLEY FIELD, Southwest Louisiana Coastal area: drilling mud control, 87 (April JPT, 33)
CLARK, R. C., JR., and COFFER, H. F.: *An Inexpensive Mud for Deep Wells*, (Art.) May JPT, 10
CLARK, R. C., JR., et al.: *Ten-pound Cement Slurry for Oil Wells*, 146 (June JPT, 35)
CLAUS, C. R., and STANDISH, G. A.: *Drilling Mud Control in Southwest Louisiana Coastal Area*, 87 (April JPT, 33)
CLAY-BUBBLE CEMENT, 146 (June JPT, 35)
COFFER, H. F., and CLARK, R. C., JR.: *An Inexpensive Mud for Deep Wells*, (Art.) May JPT, 10
COFFER, H. F., et al.: *Ten-pound Cement Slurry for Oil Wells*, 146 (June JPT, 35)
COKE AVAILABLE FROM COLORADO SHALES, (Art.) Feb. JPT, 9
COLDWATER OIL FIELD, Isabella County, Michigan: development and performance, 22 (Feb. JPT, 23)
COLLINS, R. E., and CRAWFORD, P. B.: *Estimated Effect of Vertical Fractures on Secondary Recovery*, 192 (Aug. JPT, 41)
COLORADO: Green River formation, liquid fuels from shale deposits available, (Art.) Feb. JPT, 9
CONDUCTIVE SOLIDS. See Electric Logging
CONOCO M-1 DRILLING MUD, (Art.) May JPT, 10
CONPERNICK, 204 (Sept. JPT, 112)
CORE: liquid saturation, determination by magnetic susceptibility method, 203 (Sept. JPT, 111)
CORROSION and corrosion fatigue of sucker rods, damaging effects and their relationship to microstructure of rods, 73 (March JPT, 37)
COST ACCOUNTING: allocation of costs between petroleum liquids and gases, energy content method vs. realization method, (Art.) July JPT, 11
CRAWFORD, P. B., and COLLINS, R. E.: *Estimated Effect of Vertical Fractures on Secondary Recovery*, 192 (Aug. JPT, 41)
CRISS, C. R., and MCCORMICK, R. L.: *History and Performance of the Coldwater Oil Field, Michigan*, 22 (Feb. JPT, 23)
CRUDE OIL: reserves, future, (Art.) April JPT, 16, 20
Value to producer of barrel sold at well, (Art.) Jan. JPT, 11
CRYSTAL BALL FOR PETROLEUM ENGINEERS, (Art.) April JPT, 16

D

DAVIS, P. C., et al.: *Phase and Volumetric Behavior of Natural Gases at Low Temperatures and High Pressures*, 245 (Oct. JPT, 37)
DEHLINGER, PETER, et al.: *Optimum Sand Concentrations in Well Treatments*, 273 (Nov. JPT, 35)
DEWEES, E. J., et al.: *Measurement of Resistance to Flow of Fluids in Natural Gas Wells*, 279 (Nov. JPT, 41)
DE WITTE, LEENDERT: *Resistivity Logging in Thin Beds*, 155 (July JPT, 29)
DIRTY SAND: (see also Electric Logging): synthetic, method of making, 46 (Feb. JPT, 47)
DISPLACEMENT: air-liquid, gas-liquid, and liquid-liquid in microscopic capillaries, 162 (July JPT, 37)
Oil-water, experiments in alundum core, 57 (March JPT, 21)
DRAINAGE BOUNDARIES, determination, 186 (Aug. JPT, 39)
DRILLING: offshore: solution of problems at Big Mineral field, Texas, (Art.) Dec. JPT, 9
DRILLING EQUIPMENT: earthen platforms used at Lake Texoma in Big Mineral field, Texas, (Art.) Dec. JPT, 9
DRILLING FLUIDS: clay-water, pumping experiments and calculation of pressure losses, 287 (Nov. JPT, 49)
Nitrogen, Grable system, (Art.) Aug. JPT, 10
Pressure losses, calculation in pumping experiments on clay-water fluids, 287 (Nov. JPT, 49)
DRILLING MUD: Control in Southwest Louisiana Coastal area, 87 (April JPT, 33)
Conventional lime mud, disadvantages, especially in deep wells, (Art.) May JPT, 10
For deep wells, Conoco M-1, inexpensive substitute for conventional lime muds, (Art.) May JPT, 10
Filtration hypotheses, 31 (Feb. JPT, 32)
Filtration loss during drilling, 29 (Feb. JPT, 30)
Weighted, treatment with decanting centrifuge improves quality and reduces necessity for chemical treatment, 93 (April JPT, 39)
DRILLING RIGS, micro-hole, costs of drilling and uses, (Art.) Aug. JPT, 11
DUAL PUMPING WITH FIVE STRINGS OF TUBING, (Art.) May JPT, 15
DUBLIN, J. R., III, et al.: *Simplified Cementing Technique for Recompletion Operations*, 1 (Jan. JPT, 27)
DYE-PHOTO TOOL, operation and applications, (Art.) Oct. JPT, 13
DYES, A. B.: *Production of Water-driven Reservoirs below Their Bubble Point*, 240 (Oct. JPT, 31), correction, June JPT, 38
DYES, A. B., et al.: *Oil Production after Breakthrough as Influenced by Mobility Ratio*, 81 (April JPT, 27)

E

EDWARDS, F. C.: *Dual Pumping with Five Strings of Tubing*, (Art.) May JPT, 15
EGGLESTON, W. S., and MCEWEN, C. R.: *Value of a Barrel of Crude Oil*, (Art.) Jan. JPT, 11
ELECTRIC ANALYZER, comparison with other methods for analyzing water-drive field, 197 (Sept. JPT, 105
ELECTRIC LOGGING: dirty sands (conductive solids), experimental investigation of S. P. and resistivity phenomena, 43 (Feb. JPT, 44)
Estimation of oil and gas content in shaly rocks and porosity of shaly sands, 179 (Aug. JPT, 32)
Laterolog-limestone curve combination, 157 (July JPT, 31)
Shaly reservoir rock, interrelation of resistivity and potential, 176 (Aug. JPT, 29)
In thin beds, 155 (July JPT, 29)
ELECTRIC LOGS: interpretation of data from shaly sands, 138 (June JPT, 27)
ELECTROLYTIC MODEL, blotter type: determination of areal sweep patterns in oil recovery by in-situ combustion, 119 (May JPT, 35)
ELECTRONIC DIGITAL METHOD: solution of equations of unsteady state two-phase flow in oil reservoirs, 217; Summary, Sept. JPT, 125

ERICKSON, R. A., et al.: *Oil Production after Breakthrough as Influenced by Mobility Ratio*, 81 (April JPT, 27), correction, June JPT, 38
EXECUTIVE DEVELOPMENT PROGRAM, Humble Oil and Refining Co., (Art.) Oct. JPT, 10

F

FERGUSON, C. K., and KLOTZ, J. A.: *Filtration from Mud during Drilling*, 29 (Feb. JPT, 30)
FILTRATION. See Drilling Mud
FLOW: air-liquid, gas-liquid, and liquid-liquid displacements in single uniform Pyrex capillaries of microscopic size, 162 (July JPT, 37)
Fluid, "friction coefficient" and "friction factor" replaced by "resistance coefficient" and "transmission factor," 279 (Nov. JPT, 41)
Fluid saturation in porous core, determination by magnetic susceptibility method, 203 (Sept. JPT, 111)
Oil and gas to wells underground, supersaturation study, 230 (Sept. JPT, 127)
Oil and water in alundum core, breakthrough recoveries, 57 (March JPT, 21)
Two-phase unsteady state, solutions of equations by electronic digital method, 217; Summary, Sept. JPT, 125
Unsteady, ideal gas through porous media, numerical solution of differential equation, including effect of gas slip (Tech. Note) Oct. JPT, 27
FLUID SATURATION of porous core, determination by magnetic susceptibility method, 203 (Sept. JPT, 111)
FORMATION FRACTURES: gel-sand or oil-sand well treatments, abrasion tests, 277 (Nov. JPT, 39)
Induced during drilling, recognition in cores, causes, and importance, (Art.) March JPT, 15
Induction as means of increasing recovery of oil from formations of very low permeability, 169 (Aug. JPT, 21)
Induction and extension, mechanics, 252; Summary, Oct. JPT, 45
Plugging off water with kerosene-cement slurry, 132 (June JPT, 21)
Repair by squeeze-cementing, 6 (Jan. JPT, 32)
Sand as propping agent, optimum sand concentrations in gel-sand or oil-sand well treatments, laboratory study, 273 (Nov. JPT, 35)
Vertical, effect on secondary recovery, potentiometric model studies, 192 (Aug. JPT, 41)
FORMATION FACTOR, significance of term when applied to dirty sands, 49 (Feb. JPT, 50)
FRICTION COEFFICIENT AND FRICTION FACTOR, terms replaced by resistance coefficient and transmission factor, respectively, 279 (Nov. JPT, 41)
FUEL, LIQUID. See Shale Deposits

G

GARLICK, J. M.: *Big Mineral Field Exploitation — A Challenge to Engineers*, (Art.) Dec. JPT, 9
GARST, A. W.: *Low Cost Method of Production Stimulation*, (Art.) Nov. JPT, 10
GARVIN, W. W., et al.: *Solution of the Equations of Unsteady State Two-Phase Flow in Oil Reservoirs*, 217; Summary, Sept. JPT, 125
GASES. See Hydrocarbons; also Natural Gas
GAS INJECTION: application of laboratory data to field performance, 85 (April JPT, 31)
Oil production after breakthrough as influenced by mobility ratio, 81 (April JPT, 27), correction, June JPT, 38
Pressure maintenance at Brookhaven field, 97 (April JPT, 43)
Twelve years of return of large portion of produced gas to gas cap of thin, nonhomogeneous (Frio) sand, (Art.) June JPT, 11
GEFFEN, T. M., et al.: *Role of Bubble Formation in Oil Recovery by Solution Gas Drives in Limestones*, 294 (Dec. JPT, 21)
GELS as carriers for sand packing treatment, (Art.) Sept. JPT, 15
GLADFELTER, R. E., et al.: *Comparison of Methods for Analyzing a Water Drive Field, Torchlight Tensleep Reservoir, Wyoming*, 197 (Sept. JPT, 105)
GORE, T. L., et al.: *Phase and Volumetric Behavior of Natural Gases at Low Temperatures and High Pressures*, 245 (Oct. JPT, 37)
GRABLE SYSTEM OF DRILLING WITH NITROGEN, (Art.) Aug. JPT, 10
GRANT, B. F., and SZASZ, S. E.: *Development of an Underground Heat Wave for Oil Recovery*, 108 (May JPT, 23)
GRAVEL PACKING: essentials for success, 15 (Jan. JPT, 41)
Histories of wells, 20 (Jan. JPT, 46)
Pressure pack technique, essentials for success, 16 (Jan. JPT, 41)
Pressure pack technique, procedure, 17 (Jan. JPT, 43)
Reasons for, 16 (Jan. JPT, 42)
GREEN RIVER FORMATION, COLORADO: shale deposits contain liquid fuels in great quantities, (Art.) Feb. JPT, 9
GUERRERO, E. T., and KENNEDY, H. T.: *Effect of Surface and Interfacial Tensions on Recovery of Oil by Water Flooding*, 124 (May JPT, 41)
GULF COAST: sand control, results in 20 wells using gel treatment, (Art.) Sept. JPT, 15
GULF REFINING CO.: automatic tank switching and flow control, Weeks Island field, Louisiana, (Art.) Jan. JPT, 21
GUN PERFORATORS: bullet and jet types, test results, 9 (Jan. JPT, 35)
Effectiveness, 8 (Jan. JPT, 34)
Penetration tests, equipment, procedure, and evaluation of data, 10 (Jan. JPT, 36)

H

HARRISON, EUGENE, et al.: *Mechanics of Fracture Induction and Extension*, 252; Summary, Oct. JPT, 45
HAVENAAR, I.: *Pumpability of Clay-water Drilling Fluids*, 287 (Nov. JPT, 49)
HAWKINS, M. F., JR., and KIMMEL, M. L.: *Rotational High Pressure Viscosimeter* (Tech. Note) Nov. JPT, 31
HAZEBROEK, P., et al.: *Method for Determination of Average Pressure in a Bounded Reservoir*, 182 (Aug. JPT, 35)
HEAT WAVE, combustion-supported, for increasing oil production, concept and field experiments, 108 (May JPT, 23)
HEUER, G. J., JR., and POWER, H. H.: *Correlating Device for Predicting Reservoir Performance*, (Art.) Sept. JPT, 10

HIGGINS, R. V.: *Study of Undersaturation during Repressuring and Supersaturation during Flow of Oil to Wells*, 230 (Sept. JPT, 127)
HOCH, R. S., and BOBO, R. A.: *Mechanical Treatment of Weighted Drilling Muds*, 93 (Apr. JPT, 39)
HOPKINS, G. R.: *Trends in Drillable Acreage*, (Art.) April JPT, 20
HOWARD, G. C., and SCOTT, P. P., JR.: *Plugging Off Water in Fractured Formations*, 132 (June JPT, 21)
HUBER, T. A., et al.: *Simplified Cementing Technique for Recompletion Operations*, 1 (Jan. JPT, 27)
HUMBLE OIL AND REFINING CO.: Executive Development Program, (Art.) Oct. JPT, 10
HUNT, E. B., JR., et al.: *Role of Bubble Formation in Oil Recovery by Solution Gas Drives in Limestones*, 294 (Dec. JPT, 21)
HUNTER, E. E.: *Allocation of Costs between Petroleum Liquids and Gases*, (Art.) July JPT, 11
HURST METHOD of analyzing water-drive fields, simplified, comparison with other methods, 197 (Sept. JPT, 105)
HYDRATES: formation from mixtures of hydrogen sulfide and methane, 237 (Sept. JPT, 135)
HYDROCARBONS: gas mixtures, viscosity, computation from gas analysis or gas gravity, 264 (Oct. JPT, 47)
Viscosity, correlation of effect of pressure, temperature, and composition, 265 (Oct. JPT, 48)
HYDROGEN SULFIDE, mixture with methane: hydrate formation, 237 (Sept. JPT, 135)

J

JENKINS, R., and ARONOFSKY, J. S.: *Simplified Analysis of Unsteady Radial Gas Flow*, 149 (July JPT, 23)
JUSTUS, J. B., et al.: *Pressure Maintenance by Gas Injection in the Brookhaven Field, Mississippi*, 97 (April JPT, 43)

K

KATZ, D. L., and NOAKER, L. J.: *Gas Hydrates of Hydrogen Sulfide-Methane Mixtures*, 237 (Sept. JPT, 135)
KENNEDY, H. T., and GUERRERO, E. T.: *Effect of Surface and Interfacial Tensions on Recovery of Oil by Water Flooding*, 124 (May JPT, 41)
KEROSENE-CEMENT SLURRY for plugging off water in fractured formations, 132 (June JPT, 21)
KIESCHNICK, W. F., JR., et al.: *Mechanics of Fracture Induction and Extension*, 252; Summary, Oct. JPT, 45
KIMMEL, M. L., and HAWKINS, M. F., JR.: *Rotational High Pressure Viscosimeter* (Tech. Note) Nov. JPT, 31
KLOTZ, J. A., and FERGUSON, C. K.: *Filtration from Mud during Drilling*, 29 (Feb. JPT, 30)
KOBAYASHI, RIKI, et al.: *Viscosity of Hydrocarbon Gases under Pressure*, 264 (Oct. JPT, 47)
KURATA, F., et al.: *Phase and Volumetric Behavior of Natural Gases at Low Temperatures and High Pressures*, 245 (Oct. JPT, 37)

L

LEVINE, J. S.: *Displacement Experiments in a Consolidated Porous System*, 57 (March JPT, 21)
LIMESTONE RESERVOIRS of non-uniform porosity, definition, 294 (Dec. JPT, 21)
Solution gas drive, role of gas bubbles, laboratory study and indicated possibilities, 294 (Dec. JPT, 21)
LOUISIANA: Southwest Coastal area: drilling mud control, 87 (April JPT, 33)
Geology, 88 (April JPT, 34)
Weeks Island field, automatic tank switching and flow control, (Art.) Jan. JPT, 21
LOW-TEMPERATURE SEPARATION PROCESSES: application of data on phase and volumetric behavior of gas mixtures, 245 (Oct. JPT, 37)
LOY, M. E., et al.: *Contribution to Electrical Log Interpretation in Shaly Sands*, 138 (June JPT, 27)

M

MAGNETIC susceptibility, determination of liquid saturation in porous materials, 203 (Sept. JPT, 111)
MAGNOLIA PETROLEUM CO.: drilling mud control in Southwest Louisiana Coastal area, 87 (April JPT, 33)
MAGNOLIA RESEARCH LABORATORIES: schemes for injecting heat into oil formations, 117 (May JPT, 32)
MANAGEMENT DEVELOPMENT PROBLEMS, Humble Oil and Refining Co.'s approach, (Art.) Oct. JPT, 10
MARDOCK, E. S., and WATKINS, J. W.: *Use of Radioactive Iodine as a Tracer in Water-flooding Operations*, 209 (Sept. JPT, 117)
MATTHEWS, C. S., et al.: *Method for Determination of Average Pressure in a Bounded Reservoir*, 182 (Aug. JPT, 35)
MCCORMICK, R. L., and CRISS, C. R.: *History and Performance of the Coldwater Oil Field, Michigan*, 22 (Feb. JPT, 23)
MCEWEN, C. R., and EGGLESTON, W. S.: *Value of a Barrel of Crude Oil*, (Art.) Jan. JPT, 11
MCGLASSON, R. L., and RADD, F. J.: *Corrosion-Metallurgical Aspects of Sucker Rods and Their Oil Well Service Performance*, 73 (March JPT, 37)
MCGUIRE, W. J., et al.: *Mechanics of Fracture Induction and Extension*, 252; Summary, Oct. JPT, 45
METHANE: mixture with hydrogen sulfide, hydrate formation, 237 (Sept. JPT, 135)
MICHIGAN: history and performance of Coldwater oil field, 22 (Feb. JPT, 23)
MILLIKIN, B. T., JR.: *Twelve Years of Gas Injection in a Frio Sand*, (Art.) June JPT, 11
MISCIBLE LIQUIDS. See Oil Recovery
MISSISSIPPI: Brookhaven field. See Brookhaven
MOBILITY RATIO IN SOME IN-SITU COMBUSTION OPERATIONS: determination of areal sweep by blotter-type electrolytic model, 120 (May JPT, 36)
MODEL: electrolytic, blotter-type: advantages and disadvantages, 119 (May JPT, 35)
Determination of areal sweep patterns in oil recovery by in-situ combustion, 119 (May JPT, 35)
Experiments in recovery of oil from porous sands by injection of miscible liquids (solvents) and subsequent water flooding, 310 (Dec. JPT, 37)
Oil well: filtration measurements, 29 (Feb. JPT, 30)
Potentiometric: fractured system analog for study of effect of vertical fractures on secondary recovery, 192 (Aug. JPT, 41)

N

NABOR, G. W., and RAMEY, H. J., JR.: *Blotter-Type Electrolytic Model Determination of Areal Sweeps in Oil Recovery by In-situ Combustion*, 119 (May JPT, 35)

NATURAL GAS: conditions for forming hydrates with water when hydrogen sulfide, carbon dioxide, and paraffin hydrocarbons are present, 237 (Sept. JPT, 135)

Flow strings in six fields, measurement of transmission factors, 279 (Nov. JPT, 41)

Ideal, unsteady flow through porous media, numerical solution of the differential equation, including effect of gas slip (Tech. Note) Oct. JPT, 27

Mixtures: Phase and volumetric behavior at low temperatures and high pressures, 245 (Oct. JPT, 37)

Unsteady radial flow in reservoirs, numerical method of prediction, 149 (July JPT, 23)

NITROGEN: separation from hydrocarbons by low-temperature distillation, application of data on phase and volumetric behavior of gas mixtures at low temperatures and high pressures, 245 (Oct. JPT, 37)

NOAKER, L. J., and KATZ, D. L.: *Gas Hydrates of Hydrogen Sulfide-Methane Mixtures*, 237 (Sept. JPT, 135)

NORTHERN, T. P.: *Automatic Lease Operations, Weeks Island field, Louisiana*, (Art.) Jan. JPT, 11

O

OFFERINGA, [illegible]d VAN DER POEL, C.: *Displacement of Oil from Porous Media by Miscible Liquids*, 310 (Dec. JPT, 37)

OIL RECOVERY: by in-situ combustion: determination of areal sweeps by blotter-type electrolytic model, 119 (May JPT, 35)

Fracture of formations as means of increasing, 169 (Aug. JPT, 21)

Heat wave method, development, 108 (May JPT, 23)

From fractured formations: conditions affecting, 170 (Aug. JPT, 22)

From porous media by injection of miscible liquids (solvents) and subsequent water flooding, model experiments, 310 (Dec. JPT, 37)

OWEN, H. D., and CALDWELL, B. M.: *New Tool for Perforating Casing below Tubing*, 302 (Dec. JPT, 29)

P

PENDEXTER, CHARLES, and ROHN, R. E.: *Fractures Induced during Drilling*, (Art.) March JPT, 15

PERFORATOR: tubing gun using a swing jet charge for perforating casing below tubing, 302 (Dec. JPT, 29)

PERKINS, F. M., JR., et al.: *Interrelation of Resistivity and Potential of Shaly Reservoir Rock*, 176 (Aug. JPT, 29)

PETROLEUM ENGINEERING: development and future problems, (Art.) April JPT, 16

PIROS BURNER: construction and use in thermal recovery of oil from reservoir, 110 (May JPT, 25)

PLUGGING AGENT: kerosene-cement slurry for plugging off water in fractured formations, 132 (June JPT, 21)

PORTER, F. M.: *A Crystal Ball for Petroleum Engineers*, (Art.) April JPT, 16

POUPON, A., et al.: *Contribution to Electrical Log Interpretation in Shaly Sands*, 138 (June JPT, 27)

POWER, H. H., and HEUER, G. J., JR.: *Correlating Device for Predicting Reservoir Performance*, (Art.) Sept. JPT., 10

PRESSURE. See Reservoir Pressure

PRESSURE MAINTENANCE. See Gas Injection, etc.

PRODUCTIVITY: stimulation by removal of water block by injection of crude-oil solution of surface agent, (Art.) Nov. JPT, 10

PUMPING: dual with five strings of tubing, (Art.) May JPT, 15

R

RADD, F. J., and MCGLASSON, R. L.: *Corrosion-Metallurgical Aspects of Sucker Rods and Their Oil Well Service Performance*, 73 (March JPT, 37)

RADIOACTIVE IODINE as tracer in water flooding, 209 (Sept. JPT, 117)

RAMEY, H. J., JR., and NABOR, G. W.: *Blotter-Type Electrolytic Model Determination of Areal Sweeps in Oil Recovery by In-situ Combustion*, 119 (May JPT, 35)

RECOMPLETION: benefits from simplified cementing technique, 1, (Jan. JPT, 27)

REISTLE, C. E., JR.: *How One Company Appraises Management Development Problems*, (Art.) Oct. JPT, 10

RELATIVE PERMEABILITY: dynamic, calculation in experiments on oil-water displacement in alundum core, 57 (March JPT, 21)

Gas to oil, predicting on basis of early production data, (Art.) Sept. JPT, 10

Oil-water: determination of liquid saturation of porous core by magnetic susceptibility method, 203 (Sept. JPT, 111)

Survey with Dye-Photo tool, (Art.) Oct. JPT, 14

REPRESSURING: undersaturation where some effective permeability to gas exists, 230 (Sept. JPT, 127)

RESERVES: estimating: crystal ball for engineers, (Art.) April JPT, 16

Three periods in life of producing property used as basis, July JPT, 55

Trends in drillable acreage, (Art.) April JPT, 20

RESERVOIR FLUID containing 35 mole per cent hydrogen sulfide: equilibrium vaporization ratios of other components, 67, (March JPT, 31)

Pressure-volume relationships, 67 (March JPT, 31)

Published correlations on physical properties of fluids can lead to gross errors, 67 (March JPT, 31)

RESERVOIR PERFORMANCE: natural gas: numerical prediction of unsteady radial flow, 149 (July JPT, 23)

Predicting on basis of early production data, solution gas drive on partial or delayed water drive, (Art.) Sept. JPT, 10

RESERVOIR PRESSURE: bounded reservoir: determination of average, 182 (Aug. JPT, 35)

RESERVOIR ROCK: shaly: estimation of oil or gas content by electric logging, 179 (Aug. JPT, 32)

Interrelation of resistivity and potential, 176 (Aug. JPT, 29)

RESISTANCE COEFFICIENT, definition, 279 (Nov. JPT, 41)
RESISTIVITY LOGGING: in thin beds, 155 (July JPT, 29)
REYNOLDS, J. J., et al.: *Ten-pound Cement Slurry for Oil Wells*, 146 (June JPT, 35)
RITCH, H. B.: *Proven Method for Control of Incompetent Sand Formations*, (Art.) Sept. JPT, 15
RODGERS, C. J.: *Some Practical Aspects of Gravel Packing*, 15 (Jan. JPT, 41)
ROHN, R. E., and PENDEXTER, CHARLES: *Fractures Induced during Drilling*, (Art.) March JPT, 15
RUBEL, A. C.: *Liquid Fuels from Oil Shale — A Critical Review* (testimony before a Senate Subcommittee), (Art.) Feb. JPT, 9

S

SAND CONTROL: gels as carriers for sand in packing treatment, (Art.) Sept. JPT, 15
SANDSTONE, thin-bedded formations, resistivity logging, 155 (July JPT, 29)
SCHILTHUIS, modified method for analyzing water-drive field, comparison with other methods, 197 (Sept. JPT, 105)
SCHNEIDER, F. N., et al.: *Role of Bubble Formation in Oil Recovery by Solution Gas Drives in Limestones*, 294 (Dec. JPT, 21)
SCOTT, P. P., JR., and HOWARD, G. C.: *Plugging Off Water in Fractured Formations*, 132 (June JPT, 21)
SECONDARY RECOVERY: estimated effect of vertical fractures in reservoir, 192 (Aug. JPT, 41)
SHALE DEPOSITS: pilot plant for developing extraction of liquid fuels an immediate necessity, (Art.) Feb. JPT, 9
SHALY SANDS: identification of oil-bearing sands qualitatively and quantitatively from electric logs, 138 (June JPT, 27)
  Porosity: estimation by electric logging, 180 (Aug. JPT, 33)
SHELDON, J. W., et al.: *Solution of the Equations of Unsteady State Two-phase Flow in Oil Reservoirs*, 217; Summary, Sept. JPT, 125
SINCLAIR RESEARCH LABORATORIES: development of an underground heat wave for oil recovery, 108 (May JPT, 23)
SMITH, R. V., et al.: *Measurement of Resistance to Flow of Fluids in Natural Gas Wells*, 279 (Nov. JPT, 41)
SOLUTION GAS DRIVE: in limestone reservoirs of nonuniform porosity: role of gas bubbles, laboratory study and indicated possibilities, 294 (Dec. JPT, 21)
SOUTHWICK, P. F., and WYLLIE, M. R. J.: *Experimental Investigation of the S. P. and Resistivity Phenomena in Dirty Sands*, 43 (Feb. JPT, 44)
STANDISH, G. A., and CLAUS, C. R.: *Drilling Mud Control in Southwest Louisiana Coastal Area*, 87 (April JPT, 33)
STEEL: major factors affecting service life in oil field sucker rods, 73 (March JPT, 37)
STEWART, C. R., et al.: *Role of Bubble Formation in Oil Recovery by Solution Gas Drives in Limestones*, 294 (Dec. JPT, 21)
STEWART, F. M., et al.: *Comparison of Methods for Analyzing a Water Drive Field, Torchlight Tensleep Reservoir, Wyoming*, 197 (Sept. JPT, 105)
SUCKER RODS: corrosion and corrosion fatigue damage, 73 (March JPT, 37)
  Corrosive agencies, 73 (March JPT, 37)
  Design and selection of steels for, 78 (March JPT, 42)
  Performance affected by manufacturing variables, 79 (March JPT, 43)
  Service life affected by microstructure of rods, 73 (March JPT, 37)
SULPHUR contained in Colorado shale deposits, (Art.) Feb. JPT, 9
SZASZ, S. E., and GRANT, B. F.: *Development of an Underground Heat Wave for Oil Recovery*, 108 (May JPT, 23)

T

TAUSCH, G. H., et al.: *Simplified Cementing Technique for Recompletion Operations*, 1 (Jan. JPT, 27)
TEMPLETON, C. C.: *Study of Displacements in Microscopic Capillaries*, 162 (July JPT, 37)
TEXAS: Big Mineral field: solution of drilling problems by cooperation of various engineers, (Art.) Dec. JPT, 9
TEXAS PETROLEUM RESEARCH COMMITTEE: estimated effect of vertical fractures on secondary recovery, 192 (Aug. JPT, 41)
THERMAL ENERGY: application to oil-bearing reservoirs to increase oil recovery, 108, 117 (May JPT, 23, 32)
TIXIER, M. P., et al.: *Contribution to Electrical Log Interpretation in Shaly Sands*, 138 (June JPT, 27)
TORCHLIGHT TENSLEEP RESERVOIR, WYOMING: analysis, comparison of methods, 197 (Sept. JPT, 105)
TRACERS: characteristics required, 209 (Sept. JPT, 117)
  Radioactive. See Radioactive
TRANSMISSION FACTOR, definition and methods of computing, 279 (Nov. JPT, 41)
  Flow strings of six gas fields, measurement, 279 (Nov. JPT, 41)
TUBING GUN: swinging jet charge: description and field operation, 302 (Dec. JPT, 29)

U

UNITED STATES: crude oil: trends in drillable acreage, (Art.) April JPT, 16, 20
UNITIZATION: Brookhaven field, Mississippi, five years of pressure maintenance indicates continued successful operation, 97 (April JPT, 43)

V

VAGTBORG, HAROLD, JR.: *Equilibrium Vaporization Ratios for a Reservoir Fluid Containing a High Concentration of Hydrogen Sulfide*, 67 (March JPT, 31)
VAN DER POEL, C., and OFFERINGA, J.: *Displacement of Oil from Porous Media by Miscible Liquids*, 310 (Dec. JPT, 37)
VAN EVERDINGEN, et al., 1952 method for analyzing water-drive field, comparison with other methods, 197 (Sept. JPT., 105)
VISCOSIMETER: high pressure rotational (Tech. Note) Nov. JPT, 31

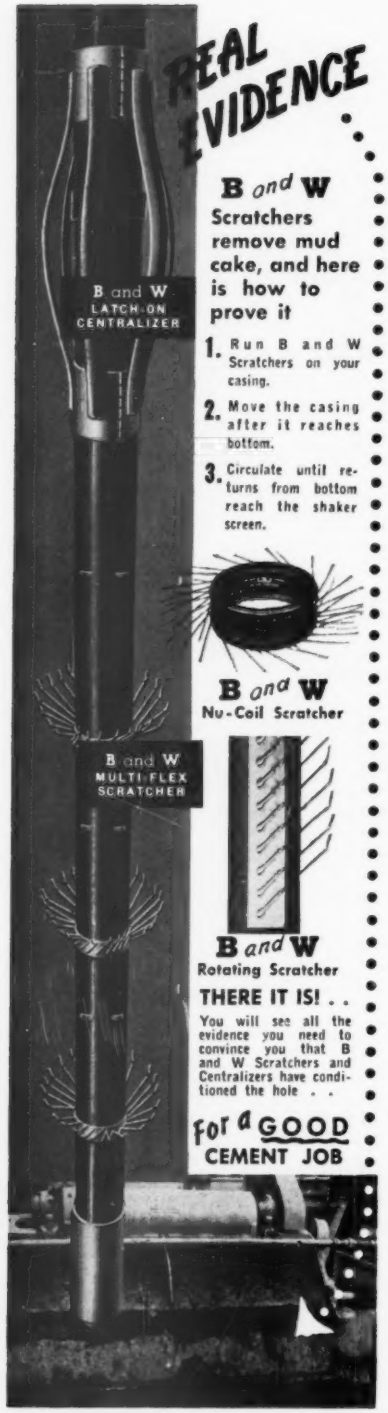
W

WALLICK, G. C., and ARONOFSKY, J. S.: *Effect of Gas Slip on Unsteady Flow through Porous Media — Experimental Verification* (Tech. Note) Oct. JPT, 27

WATER BLOCK: low-cost removal by injection of crude-oil solution of surface agent, (Art.) Nov. JPT, 10
WATER CONING: control: comparative efficiencies of horizontal and vertical barriers, 133 (June JPT, 22)
WATER-DRIVE FIELD: methods for analyzing, comparison, modified Schilthuis, simplified Hurst, van Everdingen, et al., and electric analyzer, 197 (Sept. JPT, 105)
WATER FLOODING: effects of surface tension of brine and interfacial tension between oil and brine on recovery of oil, 124 (May JPT, 41)
Gas decreases effect of interfacial and surface tensions of liquids on oil recovery, 129 (May JPT, 46)
Location of flooded horizons with Dye-Photo tool, (Art.) Oct. JPT, 13
Oil production after breakthrough as influenced by mobility ratio, 81 (April JPT, 27), correction, June JPT, 38
Production of reservoirs below bubble point, effect on recovery, 240 (Oct. JPT, 31)
Radioactive iodine as tracer, 209 (Sept. JPT, 117)
Recovery of oil from porous sands first treated with a miscible liquid (solvent), circulation process, model experiments, 310 (Dec. JPT, 37)
Water block, low-cost removal by injection of crude-oil solution of surface agent, (Art.) Nov. JPT, 10
WATKINS, J. W., and MARDOCK, E. S.: *Use of Radioactive Iodine as a Tracer in Water-flooding Operations*, 209 (Sept. JPT, 117)
WEEKS ISLAND FIELD, LOUISIANA, automatic tank switching and flow control, (Art.) Jan. JPT., 21
WELL COMPLETION: gun perforating, effectiveness, 8 (Jan. JPT, 34)
Recompletion, simplified cementing technique for, 1 (Jan. JPT, 27)
WELLS, N. C.: *Drilling with Nitrogen*. Report by C. R. McEwen, (Art.) Aug. JPT, 10
WELL TREATMENTS; gel-sand or oil-sand: abrasion tests, 277 (Nov. JPT, 39)
Sand as propping agent, optimum sand concentrations, laboratory study, 273 (Nov. JPT, 35)
WEST, W. J., et al.: *Solution of the Equations of Unsteady State Two-phase Flow in Oil Reservoirs*, 217; Summary, Sept. JPT, 125
WHALEN, J. W.: *Magnetic Susceptibility Method for Determination of Liquid Saturation in Porous Materials*, 203 (Sept. JPT, 111)
WILLIAMS, R. H., et al.: *Measurement of Resistance to Flow of Fluids in Natural Gas Wells*, 279 (Nov. JPT, 41)
WILSEY, L. E., and BEARDEN, W. G.: *Reservoir Fracturing — A Method of Oil Recovery for Extremely Low Permeability Formations*, 169 (Aug. JPT, 21)
WINSAUER, W. O., et al.: *Interrelation of Resistivity and Potential of Shaly Reservoir Rock*, 176 (Aug. JPT, 29)
WYLLIE, M. R. J., and SOUTHWICK, P. F.: *Experimental Investigation of the S. P. and Resistivity Phenomena in Dirty Sands*, 43 (Feb. JPT., 44)
WYOMING, TORCHLIGHT TENSLEEP RESERVOIR, analysis, comparison of methods, 197 (Sept. JPT, 105)

Z

ZOMA TANNER PROPERTY: field trials of combustion-supported heat wave for increasing recovery of oil, 109 (May JPT, 24) ★★★


REAL EVIDENCE
B and W
Scratchers remove mud cake, and here is how to prove it
1. Run B and W Scratchers on your casing.
2. Move the casing after it reaches bottom.
3. Circulate until returns from bottom reach the shaker screen.
B and W LATCH-ON CENTRALIZER
B and W Nu-Coil Scratcher
B and W MULTI-FLEX SCRATCHER
B and W Rotating Scratcher
THERE IT IS! . .
You will see all the evidence you need to convince you that B and W Scratchers and Centralizers have conditioned the hole . .
for a GOOD CEMENT JOB
B and W Inc.
Well Completion Specialists
GULF COAST
Box 5266
Houston 12, Texas
Phone WE-6603
WEST COAST
Box 3751
Los Angeles 54, Calif.
Phone PL-6-9101

MEET the AUTHORS

CHARLES R. STEWART, senior research engineer for Stanolind Oil and Gas Co., is a chemical engineering graduate of the University of Texas. He has worked in the Stanolind Laboratory since 1940, and for the past few years has been working on the subject of the performance characteristics of limestone.

TED M. GEFFEN is technical group supervisor for Stanolind's Research Dept., Tulsa. After receiving his BS degree in petroleum engineering from the University of Oklahoma in 1943 he worked in Alberta, Canada, for the Petroleum and Natural Gas Conservation Board and the California Standard Co. In 1946 he joined Stanolind.

ELTON B. HUNT, JR., is a research engineer for Stanolind. He received his BS degree from the University of Arkansas in 1943 and a PhD degree in physical chemistry from Iowa State College in 1950.

VIRGIL J. BERRY, JR., is a technical group leader in Stanolind's Research Dept., Tulsa. He has been with Stanolind since 1951 and presently heads the surface and phase behavior group. He received his BE degree from Vanderbilt University and his MS and PhD degrees from California Institute of Technology.

F. N. SCHNEIDER, engineer with the Stanolind Research Center in Tulsa, received his BS degree from Iowa University in 1943 and his MS degree from the University of Oklahoma in 1953. After World War II he spent five years in petroleum production before returning to school. Since 1953 he has been with Stanolind.

BLAKE M. CALDWELL is vice-president in charge of research and engineering for Welex Jet Services, Inc., Fort Worth. He received his BS and MS degrees in chemical engineering from Texas A&M and has done graduate work at the California Institute of Technology. He joined Welex in 1949.

(Continued on Page 63)